



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/533,365	03/22/2000	Masayuki Kitajima	980069B	9270

23850 7590 07/11/2003

ARMSTRONG, WESTERMAN & HATTORI, LLP  
1725 K STREET, NW  
SUITE 1000  
WASHINGTON, DC 20006

EXAMINER

EVERHART, CARIDAD

ART UNIT

PAPER NUMBER

2825

DATE MAILED: 07/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/533,365

Applicant(s)

KITAJIMA ET AL.

Examiner

Caridad M. Everhart

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 32,34,35 and 37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 34,35 and 37 is/are allowed.
- 6) ☒ Claim(s) 32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 103***

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakatsu (US 5,388,752) in view of either one of Sogo(JP408222849) or Mori et al ("Mori")(GB2181084A).

Kawakatsu discloses that the placing of the apparatus for soldering has been placed in an enclosure or chamber which has a non-oxidizing atmosphere such as N<sub>2</sub>(col. 1, lines 30-37). This is interpreted to include the flux vessel, because Kawakatsu states that "the entire soldering apparatus" or "the solder bath", so that if the entire apparatus did not include the flux vessel, there would be no need to state "or the solder bath". Kawakatsu discloses means for supplying inert gas, N<sub>2</sub>, to the chamber (col. 1, lines 33-36). Kawakatsu discloses measurement means for detecting the oxygen concentration (col. 4, lines 57-62), although the details of these means are not given. Though Kawakatsu discloses a method in which a nozzle is used to form an oxidation gas free zone, it is disclosed that the oxidation gas free chamber has also been carried out by Kawakatsu. Kawakatsu also discloses the measurement of the oxygen concentration in the nitrogen gas (col. 4, lines 65-67). Kawakatsu discloses circuit boards, although Kawakatsu is silent with respect to bumps(col. 1, lines 15-21).

Application/Control Number: 09/533,365

Art Unit: 2825

Kawakatsu is silent with respect to the flux vessel and the solder vessel being in the same chamber, although the implication is contained in the statement "the entire soldering apparatus", as discussed above. Kawakatsu is silent with respect to the details of the means for detecting the oxygen in the vessel, although Kawakatsu discloses that low oxygen concentration is needed, and discloses measuring the oxygen concentration in the N<sub>2</sub> over the vessel.

Sogo discloses a chamber which includes both the fluxer and the solder vessel (abstract and Fig. 1 and Fig. 7).

Mori discloses the solder bath and a fluxing bath in the same apparatus (Fig. 1 and lines 112-120 and claim 2).

One of ordinary skill in the art would have been motivated to have included the flux bath with the solder vessel in one apparatus as taught by either Sogo or Mori in the apparatus taught by Kawakatsu in order to facilitate transfer of the substrate and in order to take advantage of the findings of Kawakatsu that the exposure to oxygen is detrimental, and therefore an oxygen free environment is provided and because Kawakatsu implied this in his disclosure as pointed out above.

#### ***Allowable Subject Matter***

Claims 34, 35, and 37 are allowed.

The prior art of record does not teach or suggest inter alia the limitations with respect to the hanging support structure.

Art Unit: 2825

The prior art of record not relied upon is considered relevant to applicant's disclosure. Nakamura, et al. (US 6,340,110B1) is not prior art with respect to applicant's application, as the domestic priority date for the Nakamura patent is after the domestic priority date for applicant's application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caridad M. Everhart whose telephone number is 703-308-3455. The examiner can normally be reached on Monday through Fridays 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 703-308-1323. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

*C. Everhart*  
CARIDAD M. EVERHART  
PRIMARY EXAMINER

C. Everhart  
July 1, 2003